CLAIMS:

1. (original) A composite system for protecting a substrate from a fire or other hyperthermal conditions, the system comprising a lower layer of an active fire protective material and an upper layer of an ablative fire protective material, the ablative material forming an open cell matrix when exposed to hyperthermal conditions to permit passage of gasses from the lower layer to ambient.

2. (currently amended) The system of claim 1 wherein the upper layer comprises at least about 7% by weight ~~inert~~ refractory fillers.

3. (currently amended) The system of claim 1 wherein the upper layer comprises at least 15% by weight ~~inert~~ refractory fillers.

4. (currently amended) The system of claim 1 wherein the upper layer comprises at least 20% by weight ~~inert~~ refractory fillers.

5. (currently amended) The system of claim 2 wherein the ~~inert~~ refractory fillers are selected from the group comprising glass, graphite, and ceramic.

6. (currently amended) The system of claim 2 wherein the ~~inert~~ refractory fillers increase reradiation of heat by the upper layer.

7. The system of claim 1 wherein the system is capable of protecting against jet fires for a period of time at least 30% greater than is provided by a coating of the same thickness of either the upper layer or the lower layer.

8. (original) The system of claim 1 further comprising a mesh or fabric reinforcement embedded in the system.

9. (original) The system of claim 1 wherein the lower layer has a thickness of about 1 to about 25 mm.

10. (original) The system of claim 1 wherein the lower layer has a thickness of about 2 to about 15 mm.

11. (original) The system of claim 10 wherein the upper layer has a thickness of about 2 to about 6 mm.

12. (original) The system of claim 1 wherein the upper layer has a thickness of about 1 to about 25 mm.

13. (original) The system of claim 1 wherein the upper layer has a thickness of about 1 to about 6 mm.

14. (currently amended) A composite system capable of protecting a substrate from a jet fire, the system comprising a lower layer of an active fire protective material which swells when exposed to a fire or other hyperthermal condition and an upper layer of a ~~an active~~ fire protective material which ~~swells~~ when exposed to a fire or other hyperthermal condition swells to form an open cell matrix to permit passage of gasses from the lower layer to ambient, the upper layer swelling less than the lower layer, the upper layer comprising a fill of refractory material comprising at least about seven percent of the upper layer by weight.

15. (original) The system of claim 14 wherein the upper layer comprises at least 15% by weight refractory material.

16. (currently amended The system of claim ~~14~~ 15 wherein the ~~inert fillers are~~ refractory material is selected from the group comprising glass, graphite, and ceramic.

17. (original) The system of claim 14 wherein the system is capable of protecting against jet fires for a period of time at least 30% greater than is provided by a coating of the same thickness of either the upper layer or the lower layer.

18. (original) The system of claim 14 further comprising a mesh or fabric reinforcement embedded in the system.

19. (original) The system of claim 14 wherein the lower layer has a thickness of about 1 to about 25 mm.

20. (original) The system of claim 14 wherein the lower layer has a thickness of about 2 to about 6 mm.

21. (original) The system of claim 20 wherein the upper layer has a thickness of about 2 to about 6 mm.

22. (original) The system of claim 14 wherein the upper layer has a thickness of about 1 to about 25 mm.

23. (original) The system of claim 1 wherein the upper layer has a thickness of about 1 to about 6 mm.

24. (currently amended) A method for protecting a substrate from hyperthermal conditions comprising a first step of applying a layer of a first active thermal protective composition to the substrate, ~~and~~ thereafter a second step of applying to the first layer an upper layer of a second ~~active~~ thermal protective composition ~~to the first layer,~~ which when exposed to a fire or other hyperthermal condition swells to form an open cell matrix to permit passage of gasses from the lower layer to ambient, the second composition comprising a fill of a refractory material comprising at least about seven percent of the second composition by

~~weight.~~ weight, and a step of embedding a mesh or fabric reinforcement in the system.

25. (original) The method of claim 24 wherein both the first composition and the second composition comprise a polymeric binder and a gas former, the second composition comprising less gas former by weight than the first composition, the method providing a composite system overlying the substrate.

26. (currently amended) The method of claim 25 ~~comprising a further step of embedding a high-temperature mesh or fabric reinforcement in the composite system.~~ wherein the upper layer is an epoxy resin modified to increase its flexibility and elasticity.

27. (currently amended) The method of claim ~~26~~ 25 wherein the reinforcement comprises a graphite fabric.

28. (original) The method of claim 26 wherein the reinforcement comprises a metal mesh.

29. (original) The method of claim 24 wherein lower layer is applied to a cured thickness of about one to about twenty-five mm.

30. (original) The method of claim 29 wherein the lower layer is less than 15 mm thick.

31. (original) The method of claim 24 wherein the lower layer responds to hyperthermal conditions by expanding to at least twice its original thickness.

32. (original) The method of claim 24 wherein the upper layer is applied to a cured thickness of about one to about fifteen mm.

33. (original) The method of claim 32 wherein the upper layer is less than about six mm thick.

34. (original) The method of claim 24 wherein the upper layer responds to hyperthermal conditions by expanding to an average thickness no more than twice its original thickness.

Claims 35-44 canceled without prejudice.

45. (new) The system of claim 1 wherein the system consists essentially of the lower layer and the upper layer.

46. (new) The system of claim 45 further comprising a primer layer applied to the substrate.

47. (new) The system of claim 45 further comprising a topcoat.

48. (new) The system of claim 1 wherein the upper layer comprises from 10% to 25% of a blowing agent which changes from solid to gas at a hyperthermal temperature to which the composition may be subjected, and at least 7% of a refractory filler.

49. (new) The system of claim 1 wherein the ablative material swells by about 10% to 100% of its initial thickness when exposed to hyperthermal conditions.

50. (new) The system of claim 8 wherein the reinforcement comprises a graphite fabric.

51. (new) The system of claim 8 wherein the reinforcement comprises a metal mesh.

52. (new) The system of claim 1 wherein the active fire-protective material swells when exposed to hyperthermal conditions to form a char having a thickness two to five times the thickness of the layer as applied.

53. (new) The system of claim 52 wherein the ablative material swells by about 10% to 100% of its initial thickness when exposed to hyperthermal conditions.

54. (new) The system of claim 52 wherein the ablative material comprises a fill of at least 25% by weight of refractory material.